SEWAGE AND ENVIRONMENT

PKS® storm water tanks made of PE/PP

Cost-effective. Low maintenance. Durable.

GEOSYNTIA

FRANK

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PKS® storm water tanks are designed for flexible use: thanks to their modular design, they can be easily customised for a wide range of purposes.

Apart from the temporary storage of storm water, the tanks can for instance be used for the retention of process water and leachate from landfills, or the provision of service and extinguishing water.

PKS® storm water tanks are made from environment-friendly PE and PP materials and meet the static strength requirements of the ATV-DVWK-A 127 standard. They come with a bright inner layer for easy maintenance and are available up to DN 3500 with welded or plug fit connections. All modules are also available as double-wall elements conforming to DWA-A 142 with integrated leak detection.

Deutsches Institut für Bautechnik DIBt

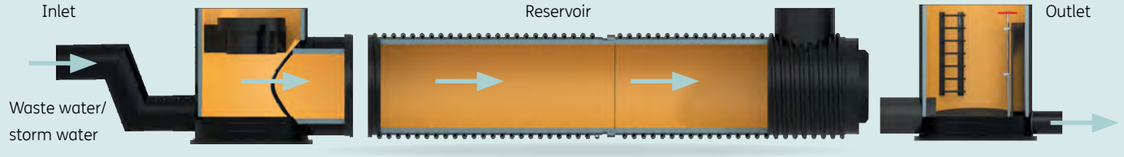
April 2018

Functional principle

Storm water storage

In order to protect the sewerage system from excess water during heavy rain, the water flow into the system must be controlled.
Storm water storage tanks protect the sewerage system, as the water is collected separately, stored for a period of time and released into the sewerage system at a controlled low rate.

The PKS® storm water retention systems consist of three modules: inlet, storage tank and outlet. The individual modules can be adjusted to suit the actual requirements and freely combined as needed. We supply both individual modules as well as turn-key storm water tanks.



Inlet structure
The water is fed through the inlet structure to the reservoir. If required, the inlet structure can be used as a relief or emergency overflow.

Reservoir
The reservoir acts as a temporary storage tank for storm water. As our reservoirs come in a variety of sizes (up to DN 3500) and shapes, they fit any local site conditions and capacity requirements.

Outlet structure
The storm water retained in the tank is released through the outlet structure into the sewerage system. In order to prevent any overload, the release is controlled by a throttle, a valve or a suitably small outlet pipe diameter.

Our services
We assist you at every step in your project in order to implement the best possible storm water tank for your specific requirements.

Advantages
- Advice from experienced experts and on site, hands-on assistance from our service technicians
- Dimensioning of tank and diameters for economical retention capacity
- Transportation cost optimized design already in the planning phase
- Short installation time thanks to pre-assembled pipelines, manifolds and other structures
- Cost optimisation by quick installation on sites where ground water level needs to be lowered temporarily
- Lightweight piping and components ensure easy handling, without heavy machinery

Inlet structures

Backflow protection. Overflow function.

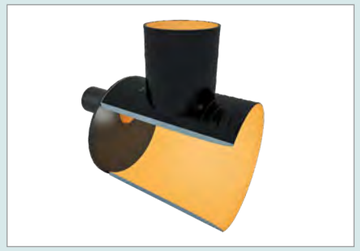
Where possible the water is fed to the reservoir through a simple water intake. However, it is recommended to install a manhole. Depending on the actual requirements, the inlet structures can be equipped with an overflow, an inspection manhole and shut-off devices.

Customised solutions

Like all products available from Frank GmbH, our inlet structures can be customised at low costs to suit the actual requirements. They are also suitable to serve as multifunction units, for instance through the incorporation of overflow and preliminary cleaning systems, revision manholes and shut-off fittings installed at the factory.

Thanks to our range of preconfigured combinations, we are able to offer you tailor-made, yet cost-effective solutions.

We produce pipes and structures up to DN 3500.



Frontal inlet with inspection chamber

Exterior bypass of a drop structure and overflow to the side

Manhole intake with inside drop/drain pipe

Manhole intake with overflow pot and roughing

Reservoirs

Storage. Retention.

We offer storm water tanks up to DN 3500 that are customised to suit the required retention capacity and space available on site.

For fast installation, we pre-assemble the tank components at our factory.

Typical designs

Single-pipe tank with revision chamber and two end covers

Tank of two connected parallel pipes with revision chamber

U-shaped tank with end cover and revision chamber

Multi-reservoir tank with connecting pipe and revision chamber

Optimised materials

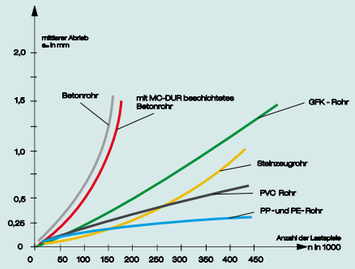
PKS® storm water tanks are made from top-grade PE and PP. The properties of these materials make them suitable for most applications. On request, we equip our reservoirs with electrically conductive, anti-microbial or non-flammable inside layers.

PE / PP

Tried and tested. Highly resistant. Durable.

For more than 50 years PE and PP have been the preferred materials for pipeline systems in chemical plants as well as gas and water supply networks. The material is not only resistant against most acids, alkaline substances and hydrocarbons, but also against communal sewage and industrial waste water.

PE and PP also have excellent mechanical properties. Thanks to the extremely smooth surface structure (k = 0.007 mm), the abrasion rate is significantly lower than that of other conventional materials, even where the medium contains large amounts of solids. The abrasion curves of pipe materials tested according to the Darmstadt method show clearly that PE and PP have the best long-term abrasion resistance.



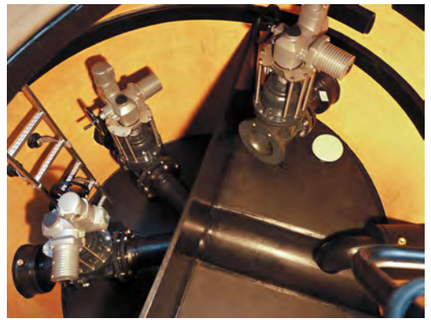
Tests according to the Darmstadt method

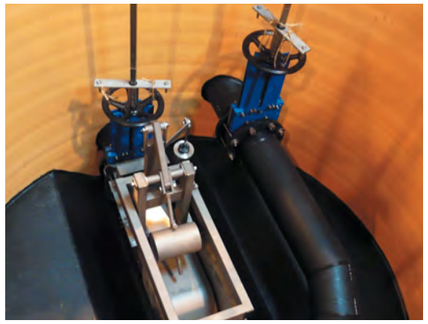
Outlet structures

Controlled outflow. Flow reduction. Monitoring.

The outlet structures control the outflow rate from the reservoir to the sewerage system to make sure that the capacity of the downstream infrastructure is not exceeded.

At our factory, we adjust the integrated outlet pipe to suit the downstream sewerage system. If required, we install additional control equipment such as valves, throttles and flow meters.





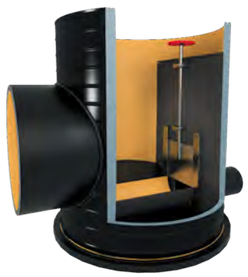
Outlet
The diameter of the outlet is determined by the permissible volumetric flow rate to the downstream sewerage system. At its simplest, the outlet consists of a basic drain pipe.

Throttles
Throttle devices are designed to reduce the outflow of storm, grey and waste water. These systems can be installed as wet or semi-dry fittings and ensure that the outflow rate is kept constant. The design and dimensions are based on the actual installation and site conditions.

Valves
If required, shut-off valves can be equipped with electric actuators. In this case, the shut-off valves are operated automatically through a control cabinet, an optional control device or by remote control from a process control system.

For fast and easy installation on site, all auxiliary equipment is fitted in advance at our factory.

Floor level outlet with revision chamber



Valve manhole with manual or electronic outflow regulation

Throttle manhole with volume-controlled throttle for constant release rate

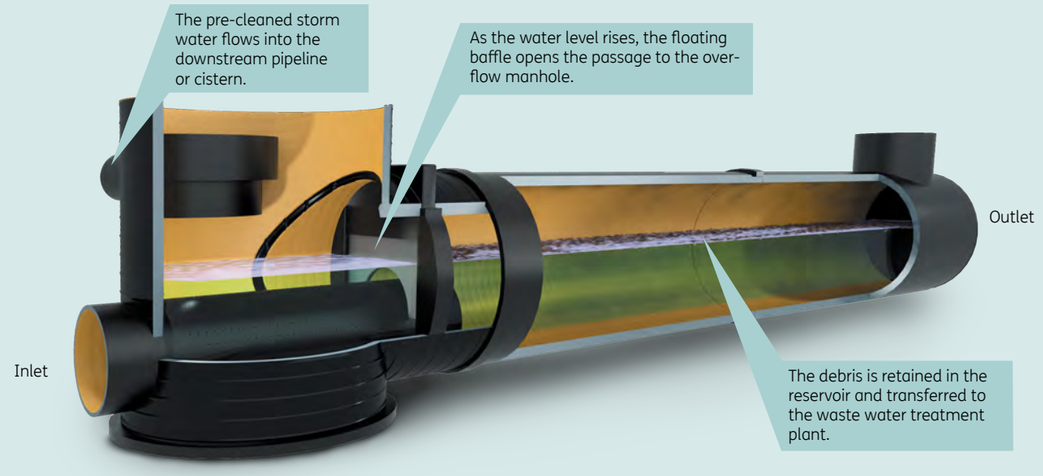
Optional equipment

Eliminating debris. Preliminary cleaning. Separation.

In order to prevent debris reaching the downstream pipelines, the PKS® storm water tank can be equipped with strainers and other filtering equipment. We provide tailor-made solutions based on the expected particle load.

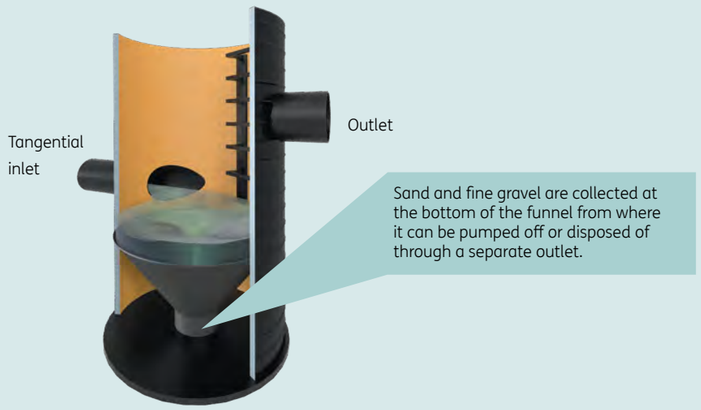
Overflow manhole with floating baffle

Debris is retained by a machine-perforated pipe and a floating baffle.
The baffle rises along with the water level in the storm water channel, keeping debris in the reservoir. This prevents them from entering the downstream pipelines.



Cyclone grit separator

Depending on the debris load, the floating baffle might not be sufficient and additional systems are necessary. In many cases, a cyclone grit separator with tangential inlet and funnel-shaped outlet is the solution. In the separator, the water spins along the inside wall and down into the manhole. The resulting vortex transports sand and fine gravel directly to the eye of the funnel where the particles are collected, pumped off or disposed of through a separate outlet.



Cyclone grit separator made in PE

Fields of application

Extinguishing water/service water

Protecting the environment – no wasting of drinking water: To protect limited drinking water resources during dry periods, the rain water collected in storm water tanks can be used for irrigation or as extinguishing water.

Extinguishing water reservoir
Over the last few years, fire services have demanded access to local extinguishing water sources and in many countries they are now required by law. We offer reservoirs of various sizes and designs.

Safe storage
To protect the environment against harmful substances contained in storm water/extinguishing water, our tanks are completely tight and come with a double-wall system, preventing contamination of the ground water.

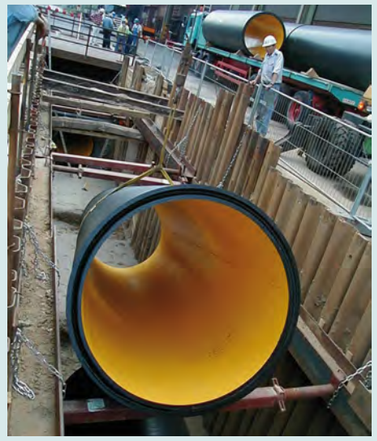
PKS® Secutec pipe system – DIBt-approved double-wall system with monitoring option

Deutsches Institut für Bautechnik DIBt

Our monitorable, DIBt-approved pipe system known as PKS® Secutec is tailor-made for industrial applications and the transport of contaminated waste water. Our system allows for continuous overpressure or underpressure monitoring as well as routine leak testing.

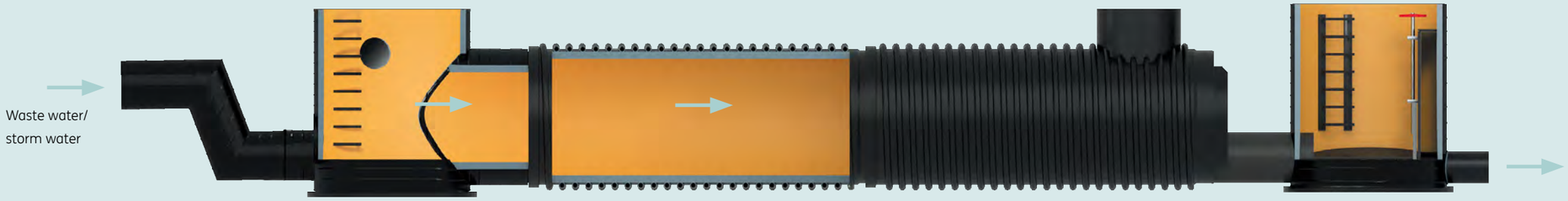
Fields of application

- Collection of fire contaminated runoff and extinguishing water containing chemical additives
- Metered temporary storage of contaminated leachate from landfills
- Reservoir for chemically treated liquids



System overview

PKS® storm water tanks – optimised for your specific application



Inlet structures

Basic version.
Frontal inlet with inspection chamber

Exterior bypass of a drop structure and overflow to the side

Manhole intake with inside drop/drain pipe

Manhole intake with overflow pot and roughing

Reservoirs

Single-pipe tank
with revision chamber and two end covers

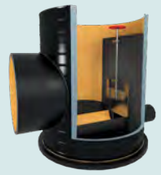
U-shaped tank
with end cover and revision chamber

Connected parallel tanks
with revision chamber

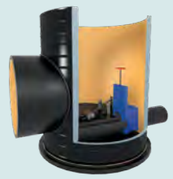
Multi-reservoir storm water tank
with connecting pipe and revision chamber

Outlet structures

Floor level outlet with revision chamber



Valve manhole with manual or electronic outflow regulation.



Throttle manhole with volume-controlled throttle for constant release rate

Pump manhole

All our systems are also available with optional dry weather channel.

Advantages of the PKS® storm water tank:

- PKS® storm water tanks are designed for easy and cost-effective customisation to suit any needs.
- The individual structures are pre-assembled at our factory, for quick installation on site, saving time and money.
- PE and PP are resistant to abrasion and offer excellent hydraulic performance (smooth inside finish, k < 0.05 mm). They are thus extremely durable, require only a minimum of maintenance and are therefore highly cost-effective.
- PKS® storm water tanks can be joined by means of electrofusion sockets. This ensures permanent and reliably tight connections, which are of course indispensable for the safe storage of chemically contaminated waste water.
- Thanks to their lightweight design, the system components can be transported and installed with light construction machinery, which makes them suitable for use in difficult-to-access or soft terrain.
- PKS® storm water tanks are flexible so that they can withstand subsidence without breaking. We offer properly dimensioned solutions with static strength properties suitable for high superimposed loads and poor ground conditions.
- The anti-adhesive inside surface prevents deposits in the pipe.
- The bright inside coat produced by co-extrusion makes inspection particularly easy. Thanks to the co-extrusion of the layers, they cannot separate.

FRANK

Personal. Flexible. Competent.

Plastic pipeline systems are part of our modern world. They are widely used in gas and drinking water distribution systems, cooling and heating installations, sewerage networks and many other fields. Our system solutions made in plastic have stood the test of time: For the last 50 years, the FRANK Group has been among the leading suppliers of plastic pipes – offering everything from standard straight sections to custom-engineered solutions! We offer tried and tested plastic piping systems made in PE, PP, PVDF and ECTFE that are being optimised and improved on a continuous basis. Apart from tubes, pipes and fittings, we provide electrofusion and other joining equipment, plastic valves, semi-finished goods, geosynthetics, parts for biogas plants and components for shallow geothermal systems.

Do you have any queries? Then please do not hesitate to contact us!

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